



Airport Noise and Operations Monitoring System (ANOMS) and its use to increase community engagement and transparency regarding the impact of aircraft noise pollution on residents

Presented by Jesse Chancellor of the DC Metroplex BWI
Community Roundtable
January 19, 2021



Purposes of this Presentation

- To summarize the new BWI-Marshall Airport Noise and Operations Monitoring System (ANOMS) and its current uses from a layman's point of view (non-technical presentation)
- To highlight current European thinking about aircraft noise pollution in densely populated regions
- To demonstrate through an example how one European airport uses its Noise Monitoring System to increase community engagement and transparency



MDOT MAA Noise Section Mission Statement

“The Noise Section of the Office of Environmental Services is committed to monitoring aircraft operations and airport-related noise levels in the communities surrounding BWI Marshall and Martin State Airports, and is dedicated to helping stakeholders understand the facts, science and regulations associated with airport noise in a transparent, clear and accessible way to those we serve.”




Source: MDOT MAA QUARTERLY NOISE REPORT THIRD QUARTER 2020

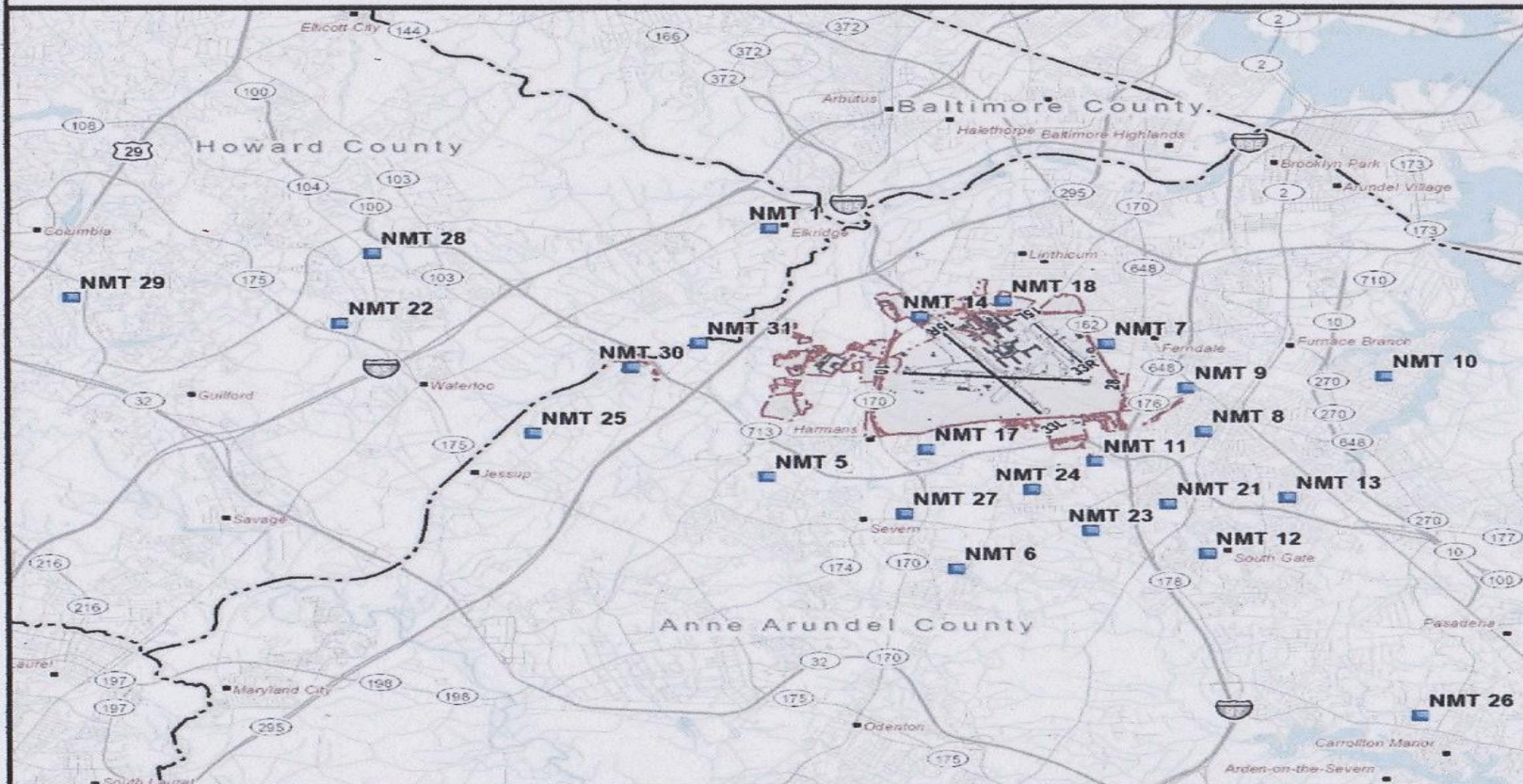


BWI- Marshall Noise Monitoring Program Summary

- ANOMS consists of 24 permanent and portable Noise Monitoring Terminals (NMTs) located within the communities surrounding BWI Marshall Airport
- Software to analyze flight tracks, noise complaints and noise levels
- WebTrak Public Replay (delayed and historic public flight tracking and inquiry tool)
- The MDOT MAA Office of Environmental Services collects, analyzes and reports on aircraft operations and aircraft noise exposure on an ongoing basis. Results are published in a Quarterly Noise Report.

Noise Monitoring Terminal Locations


-  BWI Airport Property  Existing Airport Runway Layout
-  Noise Monitoring Terminal (NMT) - Full Quarter Data





ANOMS use in BWI- Marshall Noise Monitoring Quarterly Reports:

- Derived Flight Corridors (Arrivals and Departures) (integrated with FAA radar?)
- Tables on the quarterly Aircraft, Community, and Total DNL noise values at each permanent monitoring site.
- Used to compile and map quarterly noise complaints and complainants per community



European Parliament Study: “Impact of aircraft noise pollution on residents of large cities.” Policy Department for Citizens' Rights and Constitutional Affairs Directorate-General for Internal Policies, July 2020

[https://www.europarl.europa.eu/RegData/etudes/STUD/2020/650787/IPOL_STU\(2020\)650787_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/650787/IPOL_STU(2020)650787_EN.pdf)

- Competent authorities (often local governments) may set voluntary or regulated noise limits, applying to all noise sources under their jurisdiction.
- The airport itself may declare voluntary noise limits as part of its commitment to engagement and transparency with the local community.
- In order to manage the complexities, it is becoming more and more common in Europe now, for airports to procure and implement noise and track keeping systems (NTK) which provide, at varying levels of sophistication, a way to monitor and manage the noise generated from flights into and out of the airport.



“Impact of aircraft noise pollution on residents of large cities.” - continued

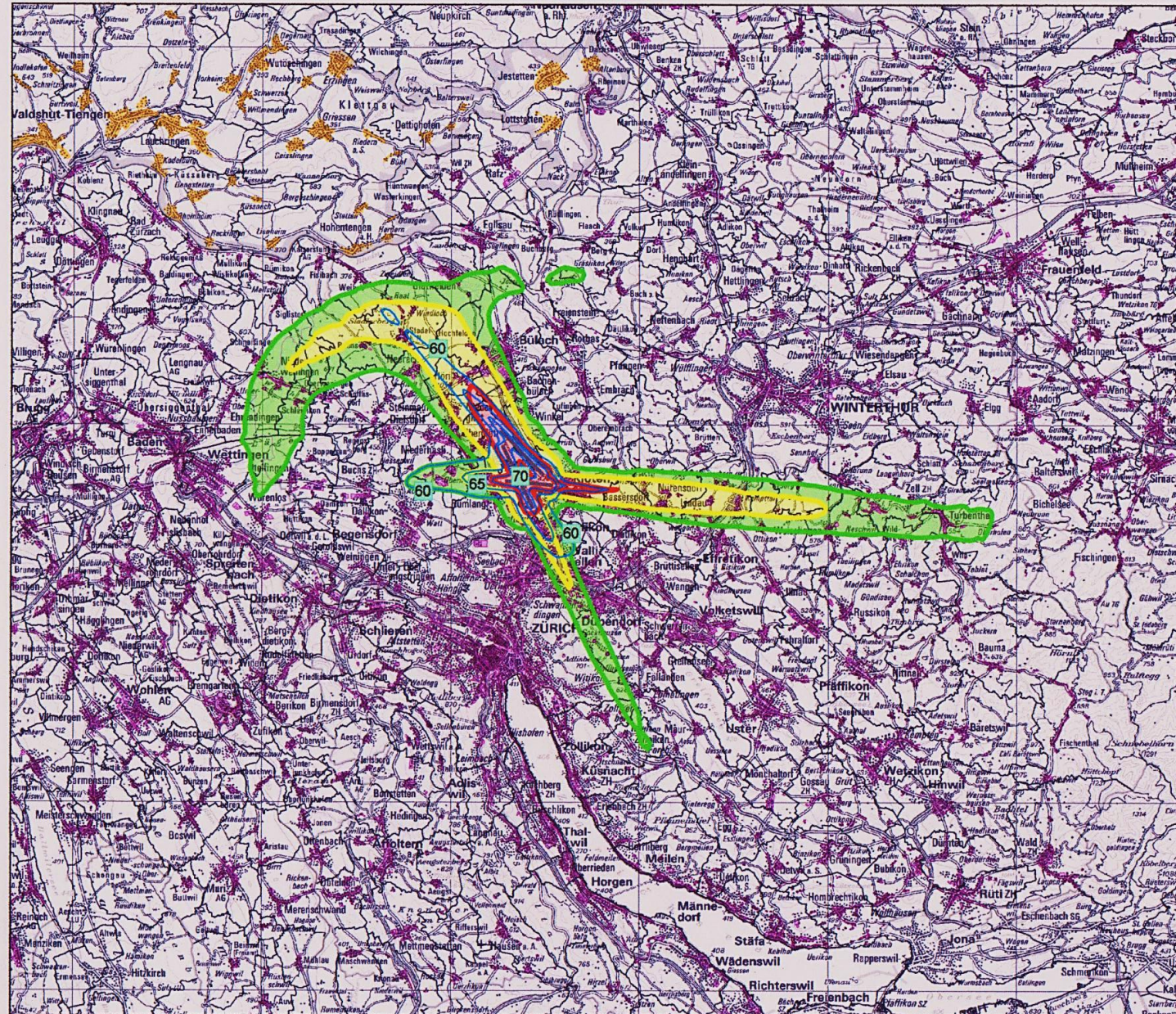
- Just by having an NTK system it is possible for an airport to claim that it is monitoring noise levels and distribution and thereby is in a position to manage aircraft noise to some degree and to better understand and respond to community concerns.
- A NTK system may also be used to provide more specific responses to individual complaints relating to single flight events. It also allows more general statistical analysis of complaints distribution and the compilation of regular complaints and noise distribution reports.
- With appropriate skills, noise monitoring can be used to verify noise contour modelling results. NTK can also provide more accurate input data for modelling to account for local good practice, which standard assumptions will not account for.



Noise Monitoring at Zurich Airport - An Example

- Noise Measurement – 14 fixed monitoring terminals
- Noise Bulletin – monthly information on the development of overall noise exposure and aircraft noise pollution at all fixed monitoring terminals
- Noise Mapping – Swiss Noise Abatement Ordinance (NAO) stipulates that aircraft noise [e]missions must be determined by calculation, which are performed by the independent Swiss Federal Laboratories for Materials Testing and Research (EMPA)

Noise Mapping at Zurich Airport - aircraft noise maps show areas where thresholds have been exceeded.



Abteilung Akustik / Lärmmin
Bericht-Nr.: 5214.024057
Flughafen Zürich

Fluglärmbelastung 2019

Karte 8

**Gebiete der ES III über
Belastungsgrenzwerten**

Legende

**Grenzwertkurven ES III
(Umhüllende Tag und Nacht)**

PW (Lr₁: 60 dB; Lr_{1,2,3}: 50 dB)

IGW (Lr₁: 65 dB; Lr_{1,2,3}: 55 dB)

AW (Lr₁: 70 dB; Lr_{1,2,3}: 65 dB)

Fluglärmbelastung Tag (06 bis 18 Uhr)
Lr₁ (60, 65 und 70 dB)

Nutzungsplanung und Siedlung
ES III Siedlung

Gemeindegrenzen
Gemeindegrenzen CH u

Massstab: 1:275'000
4'000 0 4'000 M

Impressum

Berechnung: FLUA2, Versi

Übersichtskarte: PK200: Repr

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Noise Monitoring at Zurich Airport - An Example

Determination of the Rating Sound Level (L_f) for Traffic at Civil Aerodromes used by Heavy Aircraft

| Sensitivity level (Art. 43) | Planning value | Impact threshold | Alarm value |
|--------------------------------|--------------------|---------------------|--------------------|
| | L_{r_t} in dB(A) | L_{r_t} in dB(A) | L_{r_t} in dB(A) |
| I | 53 | 55 | 60 |
| II | 57 | 60 | 65 |
| III | 60 | 65 | 70 |
| IV | 65 | 70 | 75 |



In land use zones according to Articles 14 ff. of the Spatial Planning Act of 22 June 1979¹, the following sensitivity levels apply:

- a. sensitivity level I in zones with higher noise abatement requirements, notably in leisure zones;
- b. sensitivity level II in zones in which operations that emit noise are not permitted, notably in residential zones and zones for public buildings and installations;
- c. sensitivity level III in zones in which operations emitting a certain level of noise are permitted, notably in residential and industrial zones (mixed zones) and agricultural zones;
- d. sensitivity level IV in zones in which operations emitting a high level of noise are permitted, notably in industrial zones.

² Parts of land use zones rated as sensitivity levels I or II may be assigned the next higher level if they are already exposed to noise.



Tentative Take Aways (subject to technical review and recommendation)

- We have a state-of-the-art Airport Noise Monitoring and Operations System at BWI resulting from the good work of the MAA's Office of Environmental Services
- With appropriate skills and institutional willingness, ANOMS could be used to increase community engagement, frequency of reporting and transparency - "Be Better"
- ANOMS can be used to verify noise contour modelling results
- There may be a role for COMAR in managing heavy jet airplane noise pollution in Maryland



DISCUSSION